# Heat Injury Prevention

**For TRADOC Leaders**

**TR 350-6, 30 DEC 2005, Appendix J**

**200**

# 2008 Summer Season Review

**Successful Prevention and Response measures Implemented by Commanders and cadre :**

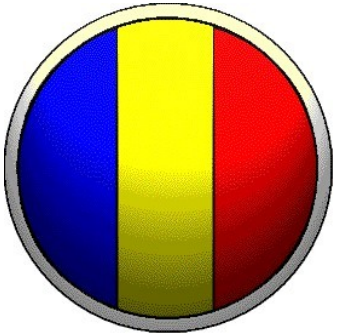
**Modifying training if more than one Soldier exhibits symptoms of heat injury!**

**Use of iced sheets for rapid cooling!**
**Contacting medical personnel early!**

**Awareness of mental status as the key indicator of pending heat injury, and …**

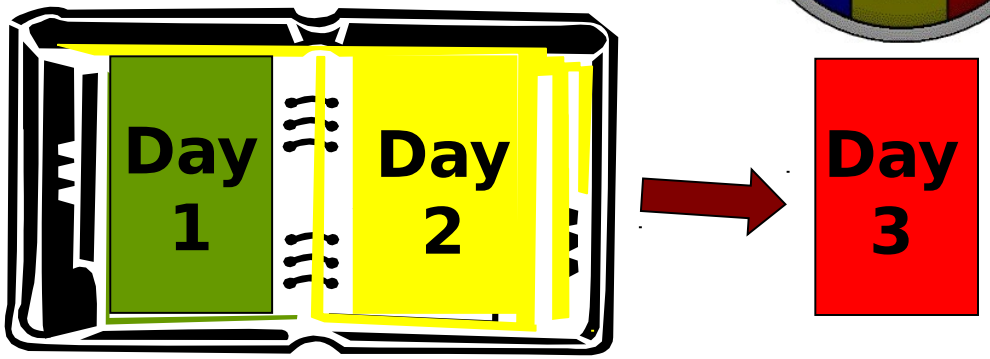
**… assessing the entire group once an individual Soldier exhibits symptoms of heat**

# 2008 Summer Season Review

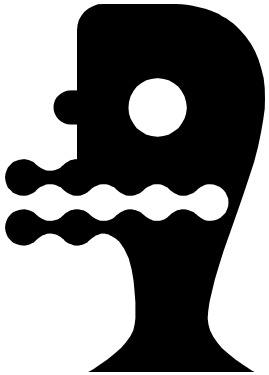


**Preventive and Response Measures Requiring more Emphasis :**

**Consider heat category <u>previous two days</u> for training modification the next day!**



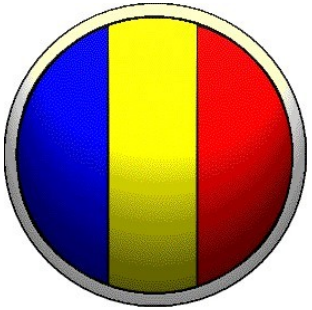

**<u>Rely on mental status</u>, instead of body temperature, to show imminent heat injury!**



**<u>Apply iced sheets before</u>, or instead of, initiating intravenous infusions (IV)!**

# Comprehensive Risk Management → Heat Injury Prevention

## Mitigation & Prevention



**BEFORE:**

Proper fluid & nutrient intake

Proper rest

Knowledge of those with risk factors

Planning for the heat using CRM worksheets

(time, uniform, chow/sports drink augmentation, work/rest plan, training adjustments)

**DURING**:

Uniform Adjustments

Rest Breaks

Fluid & Nutrient Intake during training day

Sunscreen

MONITORING

from Battle Buddy … to Commander

CONSTANT ASSESSMENT OF THE SITUATION AND ADJUSTING TRAINING

**AFTER:**

Proper Fluid & Nutrient Intake

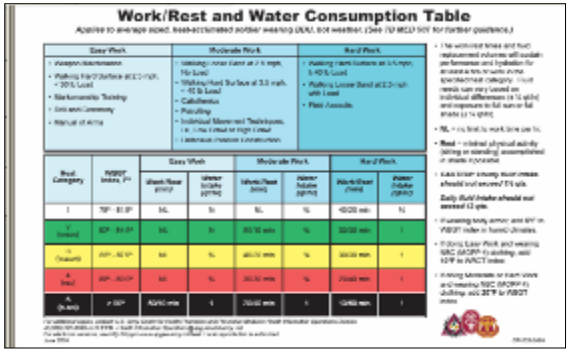
Proper rest

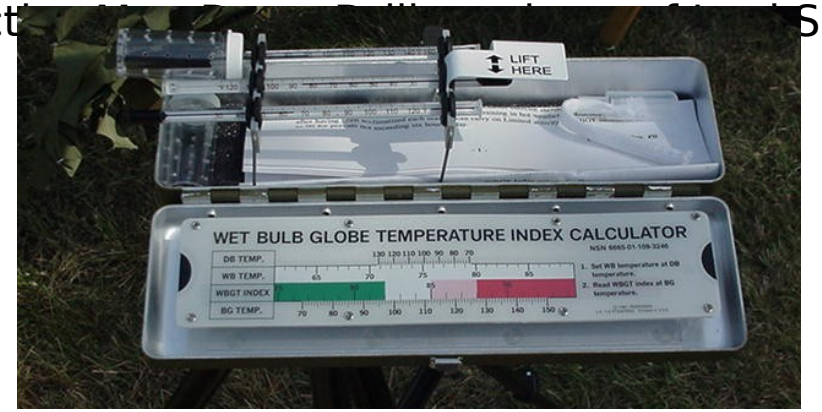
Heat dumping (i.e.. Cold showers, AC in barracks, keeping water coolers in barracks for cold liquid)

**IDENTIFY HAZARDS / ASSESS HAZARDS / DEVELOP CONTROLS / IMPLEMENT CONTROLS / SUPERVISE & EVALUATE**

# Heat Injury Prevention Readiness:

- Establish SOPs and Signals
- Place Heat Injury Posters in Garrison and Training Areas
- Identify “At Risk” Soldiers
- Train and Test ALL Personnel in Heat Injury Prevention
- Issue Heat Injury Cards to all Cadre
- Conduct daily CDR/LDR Huddles
- Pract[illegible] Sheets



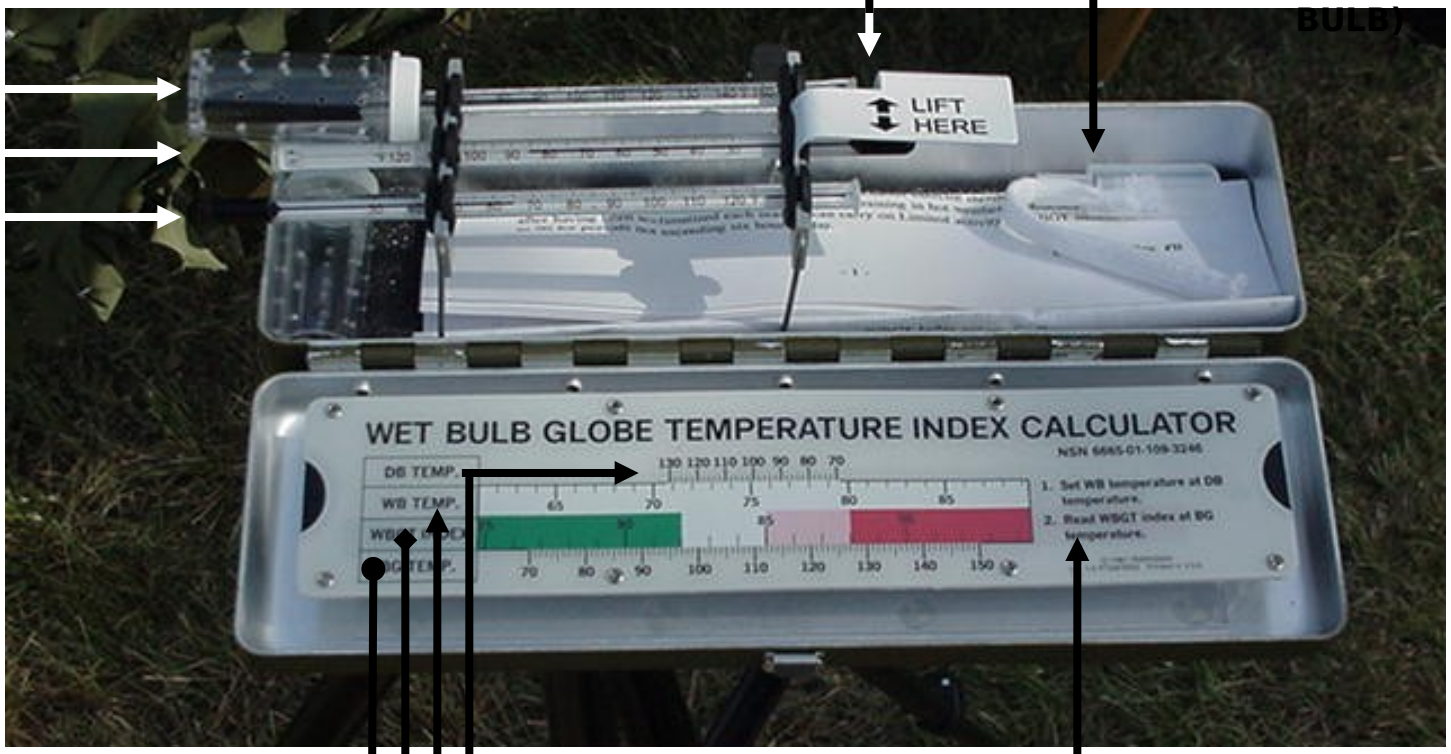




- Employ one functional WBGT Device at each Training Site

- Use Ogden Cords (knotted cord on BDU or ACU)
  - Use red or yellow cord for “at-risk” Soldiers
  - Use to monitor daily hydration (1 knot per canteen)

**IDENTIFY HAZARDS / ASSESS HAZARDS / DEVELOP CONTROLS / IMPLEMENT CONTROLS / SUPERVISE & EVALUATE**

# Heat Injury Prevention Readiness: WBGT Kit


LIFT HERE
WET BULB GLOBE TEMPERATURE INDEX CALCULATOR
DB TEMP.
WB TEMP.
1. Set WB temperature at DB temperature.
2. Read WBGT index at BG temperature.

**SUN SHADE (OVER DRY BULB)**

**WICK & WATER RESERVOIR (OVER DRY BULB)**

**THERMOMETER**

**BLACK GLOBE**

**DRY BULB**

**WET BULB**

**MOVABLE SCALE**

**DRY BULB SCALE**

**WET BULB SCALE**

**WBGT INDEX SCALE**

**BLACK GLOBE SCALE**

**INSTRUCTIONS**

# Heat Injury Prevention Readiness: WBGT Kit

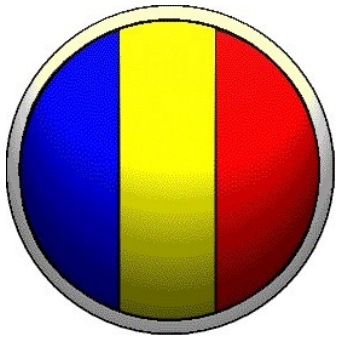
**Manual WBGT Calculations**

| With Solar Load (Outdoors; partial to full sun) | Without Solar Load (Indoors or complete overcast; no sun) |
|---|---|
| WB Temp X 0.7 | WB Temp X 0.7 |
| BG Temp X 0.1 | DB Temp X 0.3 |
| DB Temp X 0.2 | |

**Automated WBGT Heat Stress Monitors**

- **Automated WBGT Heat Stress Monitors (with National Stock Numbers) are available**
- **Annual calibration is required**

# Heat Injury Prevention through Management :

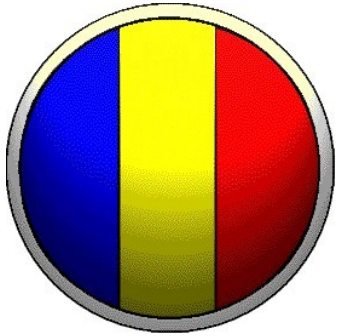


**Risk Factors:**

**Training Week 1-3_**

- **Non-acclimatized or recently hospitalized**
- **Poor physical fitness**
- **Overweight**
- **History of recent, rapid weight loss due to extreme measures**
  - **laxatives, vomiting, sweat boxes, food-water deprivation, etc.**

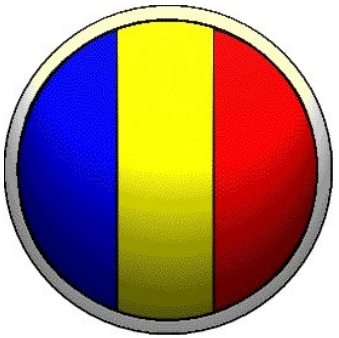
# Heat Injury Prevention through Management :



**Risk Factors:** **Multiple Training Events**

- **Prior heat injury**
- **Multiple day exposures**
  - Cumulative Effect for past 72-96 hours
- **“Overly motivated”**
- **Skin damage (sunburn, rash, poison ivy)**

# Heat Injury Prevention through Management :



**Risk Factors:** **Entry through 1st Assignment**

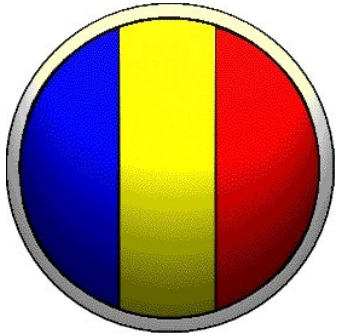
- **Nutritional supplements (ephedra, creatine, etc.)**
- **Alcohol (alcohol dehydrates)**
- **Mild illness (colds, flu, diarrhea, etc.)**
- **Medications (some interfere with cooling mechanisms)**
    - **Antihistamines (Benadryl®, Atarax®, etc.)**
    - **Decongestants (Sudafed®)**
    - **High blood pressure (diuretics, beta blockers)**
    - **Psychiatric drugs (tricyclic antidepressants, antipsychotics)**
- **Donating blood (losing red blood cells hurts heat adaptation)**

# Heat Injury Risk Management Matrix (FEB 08)

| Risk Factors | Risk Level<br>Circle the appropriate condition for each factor | | | |
|---|---|---|---|---|
| | **0 points/circle<br>Low Risk** | **1 point/circle<br>Medium Risk** | **2 points/circle<br>High Risk** | **3 points/circle<br>Extreme Risk** |
| Risk Management Worksheet | All controls implemented | | | Not all controls implemented |
| WBGT at site<br>NOTE: Add 5 F. for backpack or body armor | < Cat 1 | Cat 1 | Cat 2-3 | Cat 4-5 |
| Back-to-back Cat 5 days | 0 | 1 | 2-3 | >4 |
| Heat Injuries in past 2 days | 0 | Heat Cramps | Heat Exhaustion | Heat Stroke/ Death |
| Workload in past 2 days (see TR 350-29 workload classification chart) | Easy | Easy or Moderate | Moderate or Hard | Hard |
| Projected workload | Easy | Easy or Moderate | Moderate or Hard | Hard |
| Heat acclimatization days | >13 | 7-13 | 3-6 | <3 |
| Leader/NCO presence | Full Time | Substantial | Minimal | None |
| Cadre duty experience | 18 months | 7-18 months | 1-6 months | <1 month |
| Communication System<br>(tested at training site) | Radio and landline phone | Landline phone only | Radio only | None |
| Previous 24 hours sleep | >7 hours | 5-7 hours | 2-4 hours | <2 hours |
| Food/salty snacks every 4 hours | <4 hours | 4-6 hours | 6-7 hours | >7 hours |
| Onsite 91W/CLS and iced sheets<br>(min. 8 single bed sheets/company in cooler) | Both iced sheets & Medic, EMT, or CLS | Only Iced sheets | Medic, EMT, or CLS | None |
| Add Circled Blocks with points/circle | | | | |

**Total Score: 0-7 = Low Risk; 7-15 = Medium Risk; 16-24 = High Risk; 25-39 = Extreme Risk**

# Heat Injury Evaluation and Treatment :



## Signs & Symptoms

**All Categories:**
Dizziness, Headache, Dry mouth, Nausea, Weakness, Muscle cramps

**Possible Heat Stroke:**
Mental status change, Vomiting, Unconscious

## Treatment

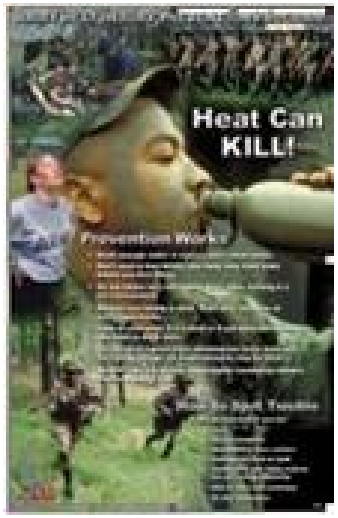
- Lay Soldier flat with feet elevated
- Loosen/Remove BDU's or ACU's
    A. Give cool (not cold) water to drink (if conscious)
    B. Sprinkle with water for heat exhaustion
    C. Wrap in ice-sheets for suspected/potential Heat Stroke
- Fan and monitor for changes
- Start an IV (1 liter Saline) if suspected/potential Heat Stroke
- Evacuate to installation Emergency Room

BOTTOM LINE

STOP, COOL, and when needed CALL 911

When in doubt, evacuate sheets and begin an IV, and evacuate

**When in doubt … EVACUATE … 87 evacuations are better than 1 heat stroke**




**jury Prevention posters and cards at:**

**/www.tradoc.army.mil/surgeon/index.htm**

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**http://chppm-www.apgea.army.mil/heat/**

**posters in**
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# Heat Injury Prevention

**Depends upon….**

**TRADOC Leaders**

**TR 350-6, 30 DEC 2005, Appendix J**

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